

***SYSTEMS AND PROCESSES FOR PROVIDING
HYDROGEN TO FUEL CELLS***

ABSTRACT

5 A process and system for providing a hydrogen-containing gas stream to a fuel cell
anode that includes providing a hydrogen-containing gas stream that includes carbon monoxide,
introducing the hydrogen-containing gas stream into a pressure swing adsorption module that
includes at least one carbon monoxide-selective adsorbent to produce a purified hydrogen-
containing gas stream, and introducing the purified hydrogen-containing gas stream to the fuel
10 cell anode. The pressure swing adsorption module can also include a second adsorbent and/or
catalyst. Also disclosed is a fuel cell system coupled to an internal combustion engine and a
fuel cell system that utilizes fuel cell waste heat for vaporizing a hydrocarbon/water mixture.